

**REMARKS**

Reconsideration of the present application in view of the above amendments and following remarks is requested respectfully.

Upon entry of the foregoing amendments, claims 1 to 8, and 19 will be pending in the present application. Claim 1 has been amended. Claim 19 has been added. Support for new claim 19 is found throughout Applicants' specification such as, for example, at page 6, lines 9 to 16. No new matter has been added.

The Action includes rejections under 35 U.S.C. §§ 102(e) and 103(a) which are addressed below.

**The Claimed Invention**

The claimed invention as set forth above in amended independent claim 1 defines an improved leadframe-based chip scale package suitable for use in a radio frequency (RF) range electronic device. The chip scale package in accordance with the present invention includes, *inter alia*, the unique combination of

- (1) a leadframe including a die attach pad located thereon for connection directly to a circuit board;
- (2) at least one aperture formed fully through the die attach to separate the die attach pad into different sections; and
- (3) at least one die having a first surface and an opposing second surface and being mounted on a section of the die attach pad such that substantially the entire opposing second surface is in mated contact with the die attach pad,

thereby forming a grounding path from the die, through the section and to the circuit board.

In cooperation, these features provide a means for reducing the length of RF ground paths and confine the RF ground returns to specific parts of the circuit board. As detailed below, this improves the RF grounding characteristics of the RF range electronic device by creating a low impedance path to ground.

**Discussion of the Rejections Under 35 U.S.C. § 102(e)**

Claims 1, 3, and 5-7 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,437,427 to Choi ("the Choi patent"). Applicants have amended claim 1 to include the recitation that the at least one aperture is *formed fully through the die attach pad*. Accordingly, Applicants submit respectfully that the rejection based upon the Choi patent is now moot.

**Discussion of the Rejections Under 35 U.S.C. § 103(a)**

Claims 2, 4, and 8 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over the Choi patent in view of U.S. Patent No. 4,884,124 to Mori ("the Mori patent"). Applicants respectfully traverse these rejections, as one of ordinary skill in the art would not have been motivated to make the proposed modification when considering the teachings of the cited references as a whole.

The Examiner mistakenly asserts that one of ordinary skill in the art would have been motivated to combine the teachings of the Choi and Mori patents to arrive at Applicants' claimed

invention. In this regard, the Examiner appears to base such assertion merely on the *single point* that the Mori patent “teaches apertures [7b & 7d] in a leadframe [7] that are formed fully through the die attach pad” (Action at 4). Applicants respectfully submit, however, one skilled in the art would not have been motivated to combine the teachings of the Mori patent with those of the Choi patent because the Mori patent plainly teaches away from other features of the claimed invention. It is well established in patent law that a reference must be considered in its entirety, including disclosures that teach away from the claims (see MPEP §2141.02).

The claimed invention, as amended, defines a chip scale package (“CSP”) suitable for use in a radio frequency (RF) range electronic device--*i.e.*, a device that operates at high frequencies. Importantly, the CSP defined by Applicants’ claimed invention has improved RF grounding characteristics as the result of a much shorter RF ground path. Referring to Figure 2B of Applicants’ specification, the shorter ground path is achieved because (1) the at least one die 56 is fully attached to the die attach pad 52; (2) the at least one die 56 is mounted in a section separated from the rest of the pad 52 by the aperture 65 formed fully through the die attach pad 52; and (3) the die attach pad 52, in turn, is directly connected directly to the circuit board (not shown).

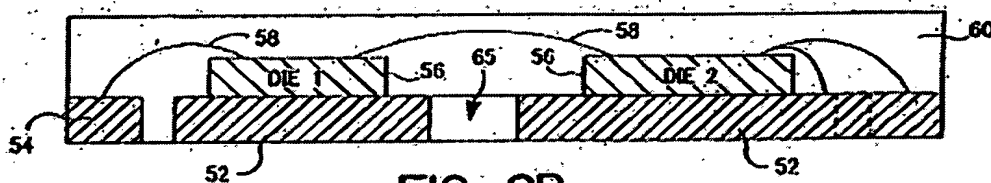


FIG. 2B

For example, the claimed invention defines a CSP comprising “at least one die having a first surface and an opposing second surface, the at least one die mounted on a section of the die attach pad such that substantially the entire opposing second surface is in mated contact with the die attach pad” (*see, e.g.*, claims 1 and 19). Referring to Figure 7 of the Mori patent, the Mori patent teaches, in contrast, that the die 1 is bonded only at the center of its bottom surface 6 to the top surface of a flat base 8 such that there is a *space between* the flat base 8 and the die 1 over most of the bottom surface of the die 1:

Furthermore, the claimed invention defines a CSP that includes “a die attach pad located thereon for connection directly to a circuit board” (*see, e.g.*, claims 1 and 19). The Mori patent, in contrast, discloses a “plug-in” type device wherein the die attach pad is *completely surrounded* by the mold compound and, thus, does *not* come into contact with the circuit board. In such a device, the die attach pad never makes direct contact to the printed circuit board, thus preventing a ground path directly through die attach pad.

Thus, one of ordinary skill in the art would recognize that, as a whole, the Mori patent teaches away from Applicants' claimed invention because the Mori device discloses a CSP device having a much longer ground path than that of the claimed CSP. The difference between the claimed invention and the prior art as a whole therefore is much greater than as characterized by the examiner. Accordingly, unless a reasonable basis can be provided as to why one skilled in the art would *ignore* all the contrary teachings in Mori, the rejection should be withdrawn and the claims allowed.

Accordingly, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) is respectfully requested.

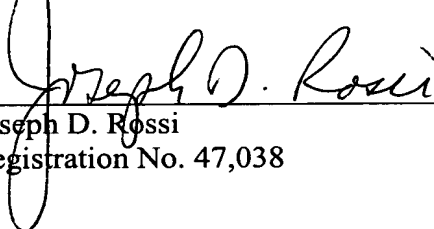
**Conclusion**

Applicants believe that the foregoing constitutes a complete and full response to the Action of record. Accordingly, an early and favorable reconsideration of the rejections and an early and favorable allowance of all of pending claims are requested respectfully.

In the event any issues remain outstanding, the Examiner is requested to call he undersigned at the telephone number listed below.

The Commissioner is authorized hereby to charge any fees or credit any overpayment associated with this Reply (copy enclosed) to Deposit Account Number 19-5425.

Respectfully submitted,  
Synnestvedt & Lechner LLP



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Joseph D. Rossi  
Registration No. 47,038

Synnestvedt & Lechner LLP  
2600 Aramark Tower  
1101 Market Street  
Philadelphia, PA 19107  
Telephone (215) 923-4466  
Facsimile (215) 923-2189  
Email [jrossi@synnlech.com](mailto:jrossi@synnlech.com)